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- 9 DEC 2002

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P01/7700 0.00-0228713.4

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office
Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference

RJ/RD/N13292

2. Patent application number
(The Patent Office will fill this part)

0228713.4

3. Full name, address and postcode of the or of each applicant (*underline all surnames*)

Barron McCann Limited
BeMac House
Fifth Avenue
Letchworth Business Park
Letchworth, Herts, SG6 2HF
United Kingdom

Patents ADP number (*if you know it*)

4042263002

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Method and Apparatus for Secure TCP/IP Communication

5. Name of your agent (*if you have one*)

Williams Powell

"Address for service" in the United Kingdom to which all correspondence should be sent (*including the postcode*)

4 St. Paul's Churchyard
London
EC4M 8AY

Patents ADP number (*if you know it*)

5 830310001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (*if you know it*) the or each application number

Country

Priority application number
(*if you know it*)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application.

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (*answer 'Yes' if:*)

Yes

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body

9. Enter the number of sheets for any of the following items you are filing with this form.
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Continuation sheets of this form

Description 2

Claim(s)

Abstract

Drawing(s)

10. If you are filing one of the following,
state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right
to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination
and search (*Patents Form 9/77*)

Request for substantive examination
(*Patents Form 10/77*)

Any other documents
(please specify)

11.

I/we request the grant of a patent on the basis of this application.

Signature

Date

9 December 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr Lee Anderson 020 7329 4400

Warning

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Method and Apparatus for Secure TCP/IP Communication

The present invention seeks to provide a method of and apparatus for securely establishing Internet connections.

Public IP networks have become pervasive. Organisations now wish to use these networks to provide interconnectivity between trusted areas or devices. The trusted devices may be located, for example, at branch offices or homes. Trusted areas could include corporate offices.

In light of the public nature of these networks, organisations need to take defensive measures against direct attack. Existing session establishment for TCP/IP is inherently insecure and prone to exploitation by active and intrusion attacks. Standard TCP/IP services reveal their presence to any attacker on the Internet, thus making them available for exploitation and attack. Denial of service attack and SYN flood attacks exploit these weaknesses.

The proposed method provides a solution for protecting against these attacks whilst at the same time providing a scalable and flexible method for exchanging data securely over Public IP networks using TCP connections. The system provides for the generation and transmission of datagrams to establish a TCP/IP connection, which datagrams do not reveal the data normally provided when initiation a TCP/IP connection. In its simplest form, the datagram provides simply destination and source addresses. Optionally, the datagram can also include information relating to the initialisation for the TCP connection.

The datagram can, if desired, include cryptographic functions.

In particular the use of specific datagrams for session establishment provides for the end-point devices, initiator and receiver, to be invisible to attackers on the Public IP

infrastructure. TCP is chosen in the preferred embodiment as a reliable data carrier over IP networks.

Prior to the establishment of a TCP/IP connection the initiating part sends a datagram to the receiving device requesting a connection be initiated by the receiving party to the initiating party. The datagram may optionally contain data content which can be used by the receiving party to authenticate the initiating party. Following receipt of the datagram the receiving party opens a TCP connection to and, optionally, negotiate a payload encryption key with the initiating party. It would be preferable at this stage for both ends to authenticate each other.

Where reference is made to 'Public IP Network(s)' the intention is to include IP networks which are less trusted than the trusted domains which are being interconnected.

In the preferred embodiment, the end points are boundary network devices, protecting trusted areas from the un-trusted IP network. Receiving devices would await incoming datagrams requesting connections. These could contain a payload which offers authentication of the requesting device. The responding device can process these requests as system resources allow, although this may be accelerated by the use of specific hardware devices. Once the responding device evaluates a requesting datagram as acceptable it will attempt to open a TCP connection to the initiating device.

Once opened successfully both entities can use the TCP/IP connection to communicate. The option exists to incorporate TCP payload encryption at this point to ensure the date being transferred is secure and will remain confidential.

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